

PATENT

Atty Docket No.: 200313170-1

App. Scr. No.: 10/780,631

IN THE CLAIMS:

Please find a listing of the claims below, with the statuses of the claims shown in parentheses. This listing will replace all prior versions, and listings, of claims in the present application.

1. (Currently Amended) A system for detecting airflow in a room, said system comprising:

an airflow indicating device having a movable component whose movement substantially directly corresponds to a direction of airflow in a vicinity of the airflow indicating device;

cooling system components; and

a computer system configured to control the cooling system components substantially based upon movement of the movable component.

2. (Original) The system according to claim 1, wherein the movable component comprises a nearly massless streamer configured to flow in the direction of airflow in a vicinity of the airflow indicating device.

3. (Original) The system according to claim 1, wherein the movable component comprises a movable mass configured to rotate about an axis in response to airflow in a vicinity of the airflow indicating device.

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4. (Original) The system according to claim 3, wherein the movable mass comprises a color changing material, said color changing material configured to change color based upon a temperature of the air in the vicinity of the airflow indicating device.

5. (Original) The system according to claim 1, wherein the movable component comprises a windsock configured to rotate about an axis in response to airflow in a vicinity of the airflow indicating device.

6. (Original) The system according to claim 1, wherein the airflow indicating device comprises at least one sensor configured to detect airflow magnitude.

7. (Original) The system according to claim 1, wherein the airflow indicating device comprises at least one sensor configured to detect temperature in a vicinity of the airflow indicating device.

8. (Original) The system according to claim 1, wherein the airflow indicating device comprises a pole having a height, said pole comprising a plurality of movable components attached at various heights of the pole.

9. (Original) The system according to claim 8, wherein the pole further comprises a plurality of sensors attached at various heights of the pole.

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10. (Original) The system according to claim 9, wherein the sensors are attached to one or more temperature indicators.

11. (Original) The system according to claim 8, wherein the pole comprises a base configured to support the pole.

12. (Original) The system according to claim 8, wherein the airflow indicating device is attached on a robotic device configured to traverse the room.

13. (Original) The system according to claim 1, further comprising:
one or more imaging devices positioned in the room to image the airflow indicating device, said one or more imaging devices being configured to transmit obtained images to the computer system.

14. (Original) The system according to claim 13, wherein the one or more imaging devices are movable.

15. (Original) The system according to claim 1, further comprising:
a robotic device configured to traverse the room, said robotic device comprising an imaging device configured to image the airflow indicating device and a memory to store the image.

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16. (Original) The system according to claim 15, wherein the robotic device is configured to communicate with the computer system and to transmit the stored image.

17. (Original) The system according to claim 16, wherein at least one of the robotic device and the computer system comprises image recognition software configured to determine the movement of the movable component.

18. (Original) The system according to claim 15, wherein the robotic device further comprises a manipulator configured to grasp and position the airflow indicating device.

19. (Original) The system according to claim 15, wherein the robotic device comprises the computer system.

20. (Original) A system for detecting airflow in a room, said system comprising:
a pole;

a plurality of movable components attached at various heights of the pole, wherein the plurality of movable components are configured to move in a direction of the airflow in a vicinity of the pole to thereby indicate the direction of airflow.

21. (Original) The system according to claim 20, further comprising a plurality of sensors attached at various heights of the pole, wherein the plurality of sensors are configured to detect at least one of airflow magnitude and temperature.

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22. (Original) The system according to claim 21, wherein the sensors are attached to one or more temperature indicators configured to visually indicate the temperatures at one or more of the heights of the pole.

23. (Original) The system according to claim 20, wherein the pole comprises a base configured to independently support the pole.

24. (Original) The system according to claim 20, wherein the pole is attached on a robotic device configured to traverse the room.

25. (Original) A method for reducing air re-circulation in a room, said method comprising:

detecting one or more airflow conditions at one or more locations in the room;

determining airflow directions at the one or more locations;

determining whether the airflow directions are acceptable; and

manipulating one or more cooling system components to bring airflow directions within acceptable ranges in response to the airflow directions being unacceptable to thereby reduce air re-circulation in the room.

26. (Original) The method according to claim 25, further comprising:

positioning a plurality of airflow indicating devices having movable components at the one or more locations in the room; and

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wherein the step of determining airflow directions comprises visually determining movement of the movable components to determine the airflow directions.

27. (Original) The method according to claim 26, wherein the step of visually determining movement comprises imaging the plurality of airflow indicating devices with one or more imaging devices.

28. (Original) The method according to claim 27, wherein the step of imaging the plurality of airflow indicating devices comprise imaging the plurality of airflow indicating devices with an imaging device of a robotic device configured to traverse the room.

29. (Original) The method according to claim 28, wherein the robotic device comprises a manipulator, and wherein the step of positioning the plurality of airflow indicating devices comprises positioning the plurality of airflow indicating devices with the manipulator of the robotic device.

30. (Original) The method according to claim 26, further comprising:
determining at least one of airflow magnitude and temperature in the vicinities of the plurality of airflow indicating devices in response to the airflow directions being unacceptable.

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31. (Original) The method according to claim 30, further comprising:

determining whether at least one of the airflow magnitudes and temperatures is acceptable; and

wherein the step of manipulating one or more cooling system components comprises manipulating the one or more cooling system components to bring at least one of airflow directions, airflow magnitudes and temperatures within acceptable ranges in response to at least one of the airflow magnitudes and temperatures being unacceptable.

32. (Original) The method according to claim 30, wherein the step of determining at least one of airflow magnitude and temperature in the vicinities of the plurality of airflow indicating devices comprises detecting at least one of the airflow magnitude and temperature with one or more sensors of a robotic device configured to traverse the room.

33. (Original) The method according to claim 26, wherein movable components of the plurality of airflow indicating devices comprise a starting position, and wherein the step of determining airflow directions at the one or more locations comprises implementing an image recognition software configured to determine a deviation of the movable components from the starting positions.

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34. (Original) A system for reducing air re-circulation in a room, said system comprising:

means for detecting one or more airflow conditions at one or more locations in the room;

means for determining airflow directions at the one or more locations;

means for determining whether the airflow directions are acceptable; and

means for manipulating one or more cooling system components to bring airflow directions within acceptable ranges to thereby reduce air re-circulation in the room.

35. (Original) The system according to claim 34, further comprising:

means for imaging the means for determining airflow directions.

36. (Original) The system according to claim 35, wherein the means for imaging comprises at least one of a movable imaging device and an imaging device of a robotic device.

37. (Original) The system according to claim 34, further comprising:

means for positioning the means for determining airflow directions.

38. (Original) The system according to claim 34, further comprising:

means for determining at least one of airflow magnitude and temperature in the vicinities of the means for determining airflow directions.

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39. (Original) A computer readable storage medium on which is embedded one or more computer programs, said one or more computer programs implementing a method for reducing air re-circulation in a room, said one or more computer programs comprising a set of instructions for:

detecting one or more airflow conditions at one or more locations in the room;

determining airflow directions at the one or more locations;

determining whether the airflow directions are acceptable; and

manipulating one or more cooling system components to bring airflow directions within acceptable ranges in response to the airflow directions being unacceptable to thereby reduce air re-circulation in the room.

40. (Original) The computer readable storage medium according to claim 39, said one or more computer programs further comprising a set of instructions for:

visually determining movement of airflow indicating devices to determine the airflow directions.

41. (Original) The computer readable storage medium according to claim 40, said one or more computer programs further comprising a set of instructions for:

imaging the airflow indicating devices with one or more imaging devices.

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42. (Original) The computer readable storage medium according to claim 40, said one or more computer programs further comprising a set of instructions for:

determining at least one of airflow magnitude and temperature in the vicinities of the plurality of airflow indicating devices in response to the airflow directions being unacceptable.

43. (Original) The computer readable storage medium according to claim 42, said one or more computer programs further comprising a set of instructions for:

determining whether at least one of the airflow magnitudes and temperatures is acceptable; and

manipulating the one or more cooling system components to bring at least one of airflow directions, airflow magnitudes and temperatures within acceptable ranges in response to at least one of the airflow magnitudes and temperatures being unacceptable.

44. (Original) The computer readable storage medium according to claim 40, wherein the airflow indicating devices comprise movable components having starting positions, said one or more computer programs further comprising a set of instructions for:

implementing an image recognition software configured to determine a deviation of the movable components from the starting positions.